

Tables and figures: Adding vitality to your article

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Editor's note: This is the 10th in a series of articles on writing for publication. The first article was published in the March 2006 issue of the Journal.

Nurse writers have the opportunity to communicate information that can make a difference in a colleague's professional or personal life or even save a patient's life. To best achieve these goals, you should consider not only the text of the manuscript but also supplemental materials such as tables and figures, commonly called "graphics," that will enhance the article.

Graphics can add to the effectiveness of all types of manuscripts. They serve several purposes, including to

- summarize important information,
- clarify complex information,
- provide an important option for readers who are visual learners, and
- provide a visual "break" for the reader who would otherwise be faced with only pages of solid text.

In addition, readers expect graphics, given that we live in a world where visual effects are commonplace—from colorful charts that show financial trends to animated sequences that demonstrate the power of a hurricane. You need to understand the proper use of graphics so your readers can obtain the greatest benefit from them. This article focuses on tables and simple graphs.

GROUND RULES

Ask yourself what graphics would best contribute to the article. What are the main points you want to emphasize? Graphics are like surgical retractors; they support the main efforts but should not overshadow them. For

example, if you want to emphasize how a new policy reduced the number of surgical site infections at your hospital, you might use a graph to visually show the downward trend in the number of infections over time. Be sure to keep graphics simple and clear. Think about the one primary point you wish the reader to take away from the graphic.

Keep graphics and text in balance. Typically, no more than one-third of your manuscript should appear in the form of graphics. Do not repeat information from the graphic in the text of your article. The point is to supplement the main text not duplicate it.

Design your graphics so readers can understand them without first referring to the text. In some cases, however, you may want to expand on, explain, or emphasize selected information from the text. For instance, you could use a table to show the wide variation in outcomes between two types of hand scrub techniques as shown by the bacteriologic test results.

Call out the graphic within the text. For example:

- The studies supporting the use of warming blankets are summarized in Table 1; or
- Many studies support the routine use of warming blankets (Table 1).

Be sure to number tables and figures consecutively: Table 1, Table 2, and so on; Figure 1, Figure 2, and so on.

TABLES

Choose a table when you need to present detailed information and show simple relationships between selected items. Tables are ideal to use when exact values are important, such as raw data and statistical analyses. You can easily create tables in software programs such as Microsoft Word.

If you have questions about writing for publication, please send them to aornjournal@aorn.org with the subject line "writing question." Some of the questions submitted may be answered in the last installment of the writing series, which will be published in February 2007.

TABLE 1

Types of Grafts Used in Aortic Root Replacement

	Advantages	Disadvantages
Composite grafts		
Mechanical valve with attached woven tube vascular graft	● More durable than biologic valves—Expected to function for the life of the patient	● Thrombogenic (ie, promotes the formation of clots)—Patient will require lifelong anticoagulation therapy
Tissue valve (ie, porcine aortic valve, bovine pericardium) with attached woven tube vascular graft	● Nonthrombogenic—Patients will not require lifelong anticoagulation therapy	● Less durable than mechanical valves—Patient may require re-operation for valve replacement in the future
Tissue grafts		
Homograft or allograft (ie, tissue from cadaver donor) ascending aorta with aortic valve that is stored frozen until ready to implant	● Nonthrombogenic—Patient will not require lifelong anticoagulation therapy ● More durable than tissue from other species ● Associated with a lower incidence of valve-related endocarditis than either mechanical or xenograft valves	● Storage and thawing of cryo-preserved human tissue requires strict adherence to tissue center guidelines
Xenograft or heterograft (ie, porcine aortic root with valve)	● Nonthrombogenic—Patient will not require lifelong anticoagulation therapy	● Less durable than mechanical woven tube composite graft

In C Cherry, S DeBord, C Hickey, "The modified Bentall procedure for aortic root replacement," (Table 3) AORN Journal 84 (July 2006) 61. Reprinted with permission from AORN, Inc, Denver.

TABLE 2

Participant Characteristics (N = 126)

Characteristic	Control group n = 64	Treatment group n = 62
Male	10	17
Female	54	45
Age	48 ± 15	50 ± 13
Height (inches)	65 ± 3	67 ± 3
Male height (inches)	71 ± 2	71 ± 2
Female height (inches)	64 ± 2	65 ± 2
Weight (lbs)	174 ± 53	184 ± 55
Male weight (lbs)	205 ± 20	195 ± 31
Female weight (lbs)	169 ± 55	180 ± 61
Body surface area (m²)	1.86 ± 0.26	1.94 ± 0.25
Body mass index (kg/m²)	28.7 ± 8.1	29.6 ± 8.8
Narcotic medications	7	6
Psychotropic medications	16	20

In D Wagner, M Byrne, K Kolcaba, "Effects of comfort warming on pre-operative patients," (Table 1) AORN Journal 84 (September 2006) 440. Reprinted with permission from AORN, Inc, Denver.

Two common types of tables are text and tabular tables. A text table contains information that summarizes key points and reduces the number of words in the main article. For example, Table 1 summarizes advantages and disadvantages of using different types of grafts for aortic root replacement.

Table 2 provides an example of a tabular format. English-speaking people usually read from left to right, then from top to bottom,¹ so place primary comparisons horizontally (eg, before-and-after test results, comparisons between study groups). Note that in this table, the primary comparison data between the control and treatment groups for each characteristic are

TABLE 3		
Reason for Use of Flash Sterilization		
Reason	Number	Percent
Instrument from previous procedure needed and not available	94	77.7
Dropped single item	10	8.3
Torn wrapper	4	3.3
Indicator failure as noted by a reject on the chemical indicator strip	1	0.8
Other	12	9.9
Total	121	100.0
In Y Leonard et al, "Evaluating use of flash sterilization in the OR with regard to postoperative infection," (Table 2) AORN Journal 83 (March 2006) 675. Reprinted with permission from AORN, Inc, Denver.		

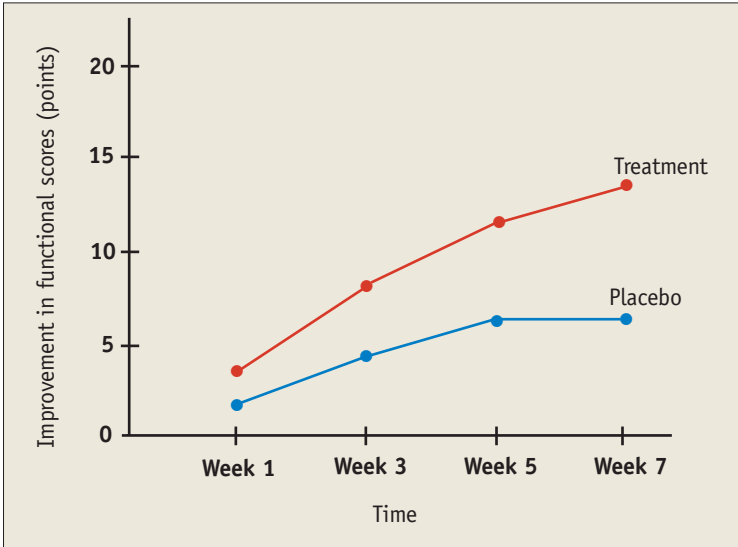


Figure 1 • Sample line graph showing a hypothetical comparison between treatment and no treatment. The vertical axis represents the dependent variable and the horizontal access represents the independent variable.

placed horizontally. Similar data are typically listed in vertical columns, which is why this table has all the characteristics listed in one column.

Table sections. Key parts of a table are the title, headings, body or data fields, and footnotes (Table 3). Titles should be short, descriptive phrases as opposed to complete sentences; for example:

“Comparison of Purposes of Tables and Figures.” Put the title at the top of the table. For a table that lists study data, the sample size should be included in the table when applicable (eg, N = 126).

Tables may have column or row headings or both. All heading titles should be concise. Column headings should be in bold type. Row head-

ings, also referred to as the “stub” section of the table, are listed in a column on the left-hand side of the table and should also contain units of measure as needed. For example, body mass index would be listed as kg/m².

The body of the table consists of the data fields or text. In a tabular table, each data point should be in a separate cell, and each cell should have a data point, even if it is “0” or n/a (ie, not applicable or not available). Align the data entries, and use the fewest decimal places necessary to reflect the precision of the data collected. Independent variables are placed in the row headings section, with dependent variables in the data fields. Provide the statistical values for any correlations made.

Footnotes may give a citation for the source of a table, or they may be used to explain exceptions or provide additional information. A common table footnote is definition of the P value used to determine significance in a study (eg, *P < .01).

GRAPHS

Graphs are ideal for showing trends and patterns and when the exact values are not of primary importance. They provide an efficient way to show support for a conclusion made in the text. More important, they have a visual impact that cannot be achieved with a table. For example, if you want to show how an intervention rapidly and effectively reduced surgical site infections, a graph will show this with more “punch” than numbers in a table.

Unlike table titles, figures titles should be placed under the figure. Graphs often can be created using PowerPoint or Microsoft Excel. Common types of graphs are line, pie, and bar graphs.

Line graphs show how the relationship between quantitative variables changes over time (Figure 1). The dependent variable is on the vertical axis and the independent variable is on the horizontal axis.¹

Pie graphs show relationships between the components of a whole. Percentages often are rounded in pie graphs, so pie graphs are not typically used when knowing exact numbers is crucial. Colors or shading are used to differentiate the “pieces of the pie” (Figure 2).

Bar graphs are used to compare amounts, frequencies, or magnitude of data.¹ Such graphs can be either vertical (Figure 3) or horizontal in orientation. The figure caption should clearly explain the purpose of the figure. As

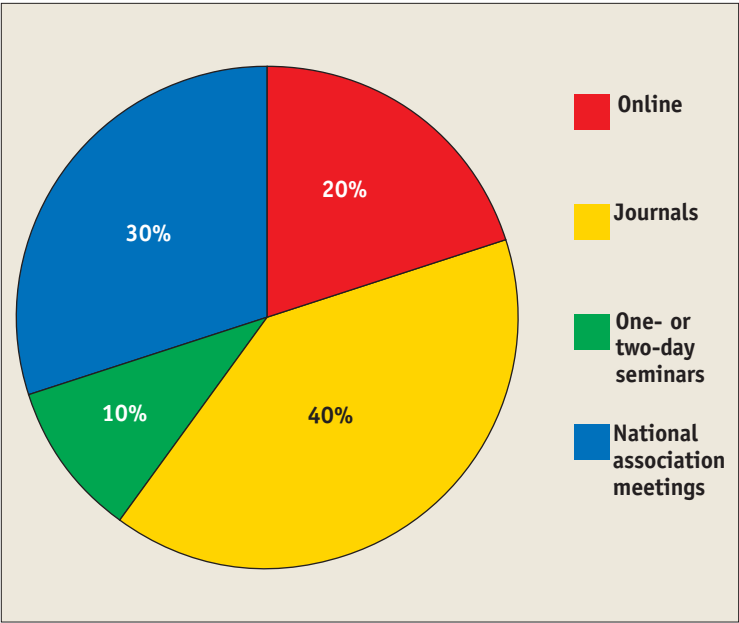


Figure 2 • Sources of continuing education for nurses. (Note: data are fictional).

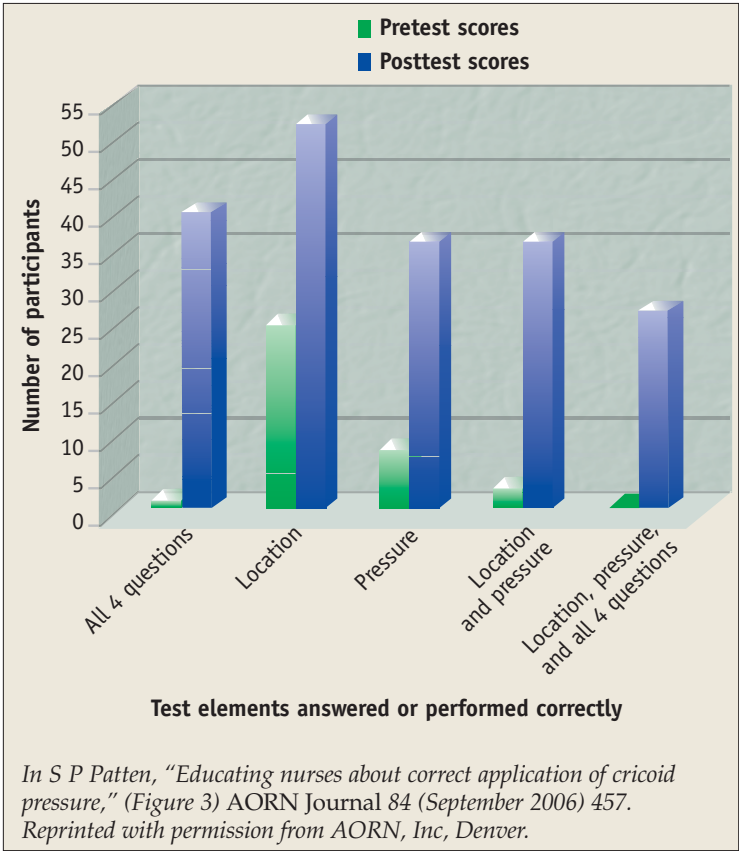


Figure 3 • This graph shows the overall results of the participants’ scores on the pretest and posttest. Bars indicate the number of participants who correctly answered the questions or performed the techniques.

with a pie chart, the bars should be different colors or distinct shades to show different groups.

SUBMISSIONS AND PERMISSIONS

Whatever type of graphics you use, be sure to follow the author guidelines related to submission. If you want to use a graphic that has previously been published in another source, you need to obtain permission from the copyright holder and send a copy of the approval to the journal that will publish your article.² Some journals may limit the number of graphics you can submit, so be sure to check for this information in the author guidelines. Most journals, however, accept and even encourage graphics. Some journals, such as the *AORN Journal*, may even have a graphics department to help you develop the right illustrations for your article.

Editors make the final decision on the use of graphics based on input from the peer reviewers, importance of the content, effectiveness of presentation, and publication space constraints. Now that you know the basics of graphics, read next month's article to learn about additional types of illustrations you may want to incorporate into your article. ♦

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PRESIDENT

CLS DEVELOPMENT, INC

Editor's note: Microsoft Word, PowerPoint, and Microsoft Excel are registered trademarks of Microsoft Corp, Redmond, Wash.

NOTES

1. C Iverson et al, *American Medical Association Manual of Style: A Guide for Authors and Editors*, ninth ed (Baltimore: Williams & Wilkins, 1998) 51-85.

2. C Saver, "Legal and ethical aspects of publishing," *AORN Journal* 84 (October 2006) 571-575.

CORRECTION

OCT 2006, VOL 84, No 4, page 575. In the article "Legal and ethical aspects of publishing," reference 4: M H Oermann, *Writing for Publication in Nursing* (Philadelphia: Lippincott, 2002) was listed with incorrect page numbers. The correct page number for the cited information is 57.

A correction has been printed to the article cited in reference 3: S T Hegyvary, "What every author should know about duplicate publication," *Journal of Nursing Scholarship* 37 (Fourth quarter 2005). The corrected version of Hegyvary's article is available online at <http://www.blackwell-synergy.com/doi/full/10.1111/j.1547-5069.2005.00051.x> (accessed 30 Oct 2006).

Nursing Schools Increase Nursing Doctoral Programs

More universities and colleges in the United States are offering doctorate in nursing practice programs than in the past, according to an Oct 30, 2006, article from *Medical News Today*. Currently, 24 universities and colleges offer the advanced degree, and almost 200 more are considering offering doctorate in nursing practice programs.

The increase in nurses pursuing doctoral degrees may be the result of increased patient safety concerns. Students currently in this field of study are

- researching antibiotic practices to reduce the incidence of postoperative infections;
- preparing community clinics to respond to terrorist attacks, natural disasters, or pandemics;
- linking nurse-managed clinics by setting up electronic health record systems to improve access to and continuity of care; and
- implementing the use of information technology

to expedite tasks such as inventory control, hospital design, and documentation.

Nurses with doctoral degrees also can help improve access to health care. Their advanced education allows these nurses to provide primary health care to populations underserved by physicians, particularly those in inner cities and rural areas.

In addition, half of the nurses who graduate with doctoral degrees are expected to enter faculty positions in nursing schools. With more teachers available, universities will be able to admit more undergraduate nursing students, which eventually may ease the current nursing shortage.

J Schenke, "Nursing doctorate programs changing the face of health care, US," *Medical News Today* (Oct 30, 2006) <http://www.medicalnewstoday.com/medicalnews.php?newsid=55298> (accessed 2 Nov 2006).